

Determination of Solar Source Regions of the Solar Wind Sampled by Ulysses and ACE Near Solar Activity Maximum

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Recent observations at high solar latitudes by the Ulysses spacecraft provide information on the **3-D** structure of the solar wind near the maximum of solar activity. High-latitude data from Ulysses and in-ecliptic data from ACE are mapped back to the solar surface using a 2-step process: (1) the speed measured at the spacecraft is used to map the solar wind back to a source surface at 2.5 solar radii assuming radial flow at constant speed, and (2) a potential field model calculated from the measured photospheric magnetic field completes the mapping to the solar surface. At low and mid-latitudes, this process provides good agreement between the measured polarity of the interplanetary magnetic field and the polarity of the solar source region to which the solar wind is mapped. The agreement is poor at latitudes poleward of **-60 deg**, perhaps because of the degradation of photospheric magnetic-field observations in polar regions. The plasma data from Ulysses and ACE are compared for intervals that map to the same solar sources.

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